GENERAL INTRODUCTION

The models 671P and 671T are high performance, low cost, general purpose, laboratory bench instruments for the measurement of pH, mV and temperature.

The model 671 series operates on six internal type “AA” batteries as well as UL and CSA approved AC line adaptor.

The temperature probe measures temperature of the sample and provide automatic temperature compensation for the pH electrode. With the model 671 series the temperature of the sample under test could be registered together with the pH value. This is an absolute necessity for pH determinations to 0.01 pH accuracy, since the pH variation of the sample due to temperature is usually much greater than 0.01 pH.

The model 671P uses PT-100 RTD temperature probes while the 671T uses the YSI 700 series interchangeable thermistor probes for temperature measurement and compensation.

Recorder output is provided for pH, mV, temperature and ATC mode of operations.

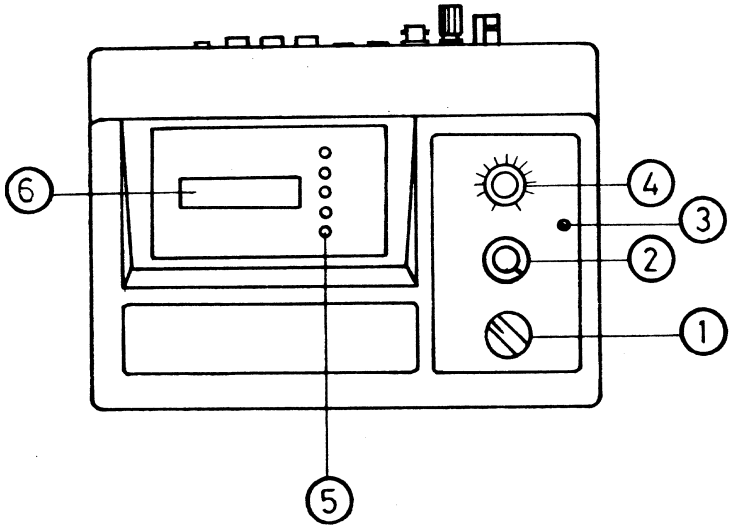
A constant current source of 10 uA is provided for Karl Fischer and other polarized electrode titration applications.

INITIAL INSPECTION

Carefully unpack the instrument and accessories. Inspect for damage in shipment. If any damage is found, NOTIFY YOUR JENCO REPRESENTATIVE IMMEDIATELY. All packing material should be saved until satisfactory operation is confirmed.

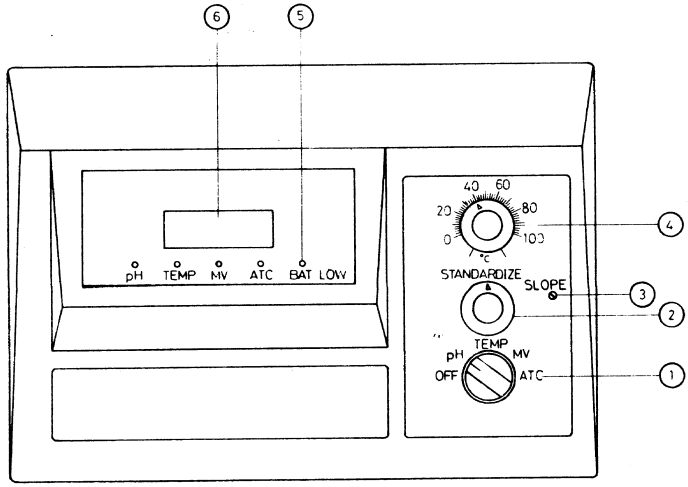
AC LINE VOLTAGE

The models 671P and 671T can be used with 115 volt and 230 volt AC line adaptors. Check the label on the AC adaptor supplied with the instrument to make sure that the AC line voltage is correct. If the wrong AC adaptor is supplied, NOTIFY YOUR JENCO REPRESENTATIVE IMMEDIATELY. DO NOT USE THE INSTRUMENT WITH THE AC ADAPTOR. OPERATE WITH BATTERIES ONLY.



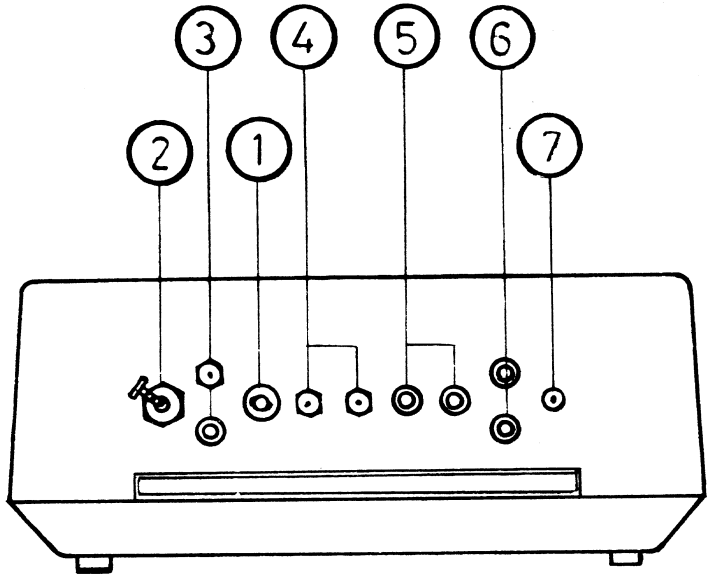
1. MODE switch
2. STANDARDIZE control
3. SLOPE control
4. TEMPERATURE control
5. Indication LED
6. LCD display

FIGURE 1 671P FRONT VIEW



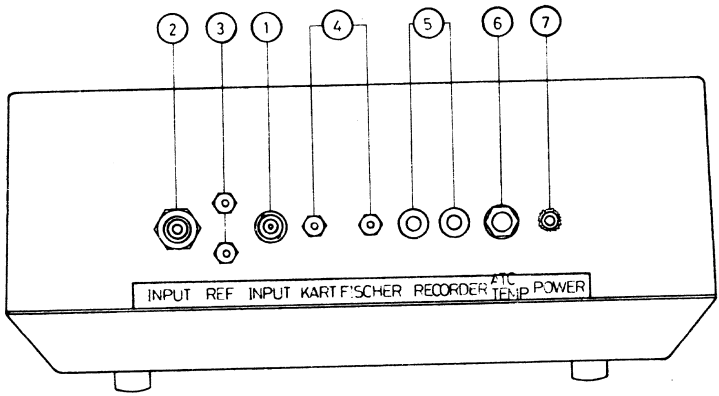
1. MODE switch
2. STANDARDIZE control
3. SLOPE control
4. TEMPERATURE control
5. Indication LED
6. LED display

FIGURE 2 671T FRONT VIEW



1. BNC electrode input connector
2. US standard electrode input connector
3. Reference electrode input connectors
4. Karl Fischer current output connector
5. Analog output connectors
6. ATC/Temp probe input connectors
7. AC line adaptor input connector

FIGURE 3 671P REAR VIEW



1. BNC electrode input connector
2. US standard electrode input connector
3. Reference electrode input connectors
4. Karl Fischer current output connectors
5. Analog output connectors
6. ATC/Temp probe input connector
7. AC line adaptor input connector

FIGURE 4 671T REAR VIEW

BATERY REPLACEMENT

1. Replace batteries when the BAT LOW indication LED is on.
2. Remove the battery compartment cover. (REFER TO FIGURE 5)
3. Replace all six type “AA” batteries.
1. Replace the battery compartment cover.

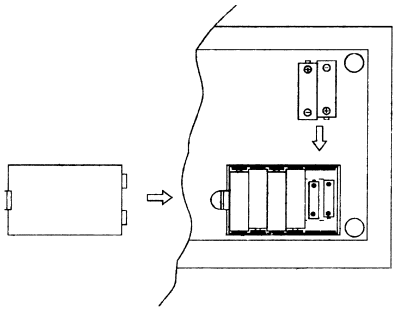


FIGURE 5 BATTERY COMPARTMENT

TURN OFF INSTRUMENT

When the instrument is not in use, set the MODE switch to the OFF position. Unpluging the AC line adaptor from the instrument or the AC line does not turn off the instrument. It would switch the instrument to operate off the internal batteries.

OPERATIONAL PROCEDURES

pH MEASUREMENTS

1. Standardization with ATC/Temp probe

The model 671P uses the Jenco Cat. No. 600A ATC/Temp probe. The model 671T can be used with any YSI 700 series thermistor probes. ATC/TEMP PROBE MAY NOT BE OFFERED AS A STANDARD ACCESSORY.

1.1 Connect the pH electrode and ATC/Temp probe to the rear of the instrument. (REFER TO FIGURE 3/FIGURE 4)

1.2 For AC line operations connect the AC line adaptor to the instrument and the AC power line. Make sure that the correct AC adaptor is used. (refer to AC LINE VOLTAGE in page 1)

1.3 Rinse the pH electrode and ATC/Temp probe in distilled water and immerse in pH buffer 7.00.

1.4 Set the MODE switch to TEMP. The TEMP indication LED will be on. The instrument will display the buffer temperature.

1.5 Set the MODE switch to ATC. The ATC indication LED will be on. Adjust the STANDARDIZE control for the instrument to read the buffer value corresponding to the buffer temperature as measured in 1.4. (REFER TO TABLE 1) Allow sufficient time for the pH electrode and the ATC/Temp probe to reach temperature equilibrium with the buffer.

1.6 Remove the pH electrode and ATC/Temp probe from buffer 7.00. Rinse with distilled water and immerse in a second buffer. The second buffer can be any stable buffer with defined temperature characteristics. The most commonly used buffers are 4.01 and 10.01. The buffer closest in pH value to the sample should be used. Measure the temperature of the second buffer by setting the MODE switch to TEMP.

1.7 Set the MODE switch to ATC and adjust the SLOPE control for the instrument to indicate the value of the buffer corresponding to the temperature as measured in 1.6. (REFER TO TABLE 1) Allow sufficient time for the pH electrode and the ATC/Temp probe to reach temperature equilibrium with the second buffer.

1.8 Rinse the electrode and the ATC/Temp probe with distilled water. The instrument is dual point standardized and ready for measurements.

2. Standardization without ATC/Temp probe

2.1 Connect the pH electrode to the rear of the instrument. (REFER TO FIGURE 3/FIGURE 4)

2.2 For AC line operations connect the AC line adaptor to the instrument and the AC power line. Make sure that the correct AC adaptor is used. (refer to AC LINE VOLTAGE in page 1)

2.3 Rinse the pH electrode in distilled water and immerse in pH buffer 7.00.

2.4 Set the MODE switch to pH. The pH indication LED will be on. Set the TEMPERATURE control on the front panel to the temperature of the buffer 7.00.

2.5 Adjust the STANDARDIZE control for the instrument to read the buffer value corresponding to the buffer temperature set in 2.4. (REFER TO TABLE 1) Allow sufficient time for the pH electrode to reach temperature equilibrium with the buffer.

2.6 Remove the pH electrode from buffer 7.00. Rinse with distilled water and immerse in a second buffer. The second buffer can be any stable buffer with defined temperature characteristics. The most commonly used buffers are 4.01 and 10.01. The buffer closest in pH value to the sample should be used. Set the TEMPERATURE control on the front panel to the temperature of the second buffer.

2.7 Adjust the SLOPE control for the instrument to indicate the value of the second buffer corresponding to the temperature set in 2.6. (REFER TO TABLE 1) Allow sufficient time for the pH electrode to reach temperature equilibrium with the second buffer.

2.8 Rinse the electrode with distilled water. The instrument is dual point standardized and ready for measurements.

3. pH measurement with ATC/Temp probe

The instrument must be dual point standardized to obtain accurate pH measurements. (refer to pH MEASUREMENTS 1)

3.1 Immerse the pH electrode and the ATC/Temp probe into the sample to be measured.

3.2 Set the MODE switch to TEMP. The TEMP indication LED will be on. The instrument will indicate the temperature of the sample.

3.3 Set the MODE switch to ATC. The ATC indication LED will be on. Allow sufficient time for the pH electrode and ATC/Temp probe to reach temperature equilibrium with the sample under test. The instrument will indicate the pH value of the sample at the temperature measured in 3.2.

4. pH measurement without ATC/Temp probe

The instrument must be dual point standardized to obtain accurate pH measurements. (refer to pH MEASUREMENTS 2)

4.1 Immerse the pH electrode into the sample to be measured.

4.2 Set the TEMPERATURE control to the temperature of the sample.

4.3 Set the MODE switch to pH. The pH indication LED will be on. Allow sufficient time for the pH electrode to reach temperature equilibrium with the sample under test. The instrument will indicate the pH value of the sample at the temperature set in 4.2.

mV MEASUREMENTS

1. Connect the working electrode to the BNC connector and the reference electrode to the reference pin connector. (REFER TO FIGURE 3/FIGURE 4)
2. Set the MODE switch to mV. The mV indication LED will be on.
3. Rinse both electrodes in distilled water.
4. Immerse both electrodes into the sample solution. The readout will indicate the absolute millivolt reading.
5. If the ATC/Temp probe is used, the temperature of the sample could be obtained by switching the MODE switch to the TEMP position.

TEMPERATURE MEASUREMENTS

The model 671P can be used with any Pt-100 temperature sensor with Banana plug connectors. The model 671T can be used with any of the YSI 700 series interchangeable thermistor probes.

1. Set the MODE switch to TEMP. The TEMP indication LED will be on.
2. Place the temperature probe in the media to be measured. The measured temperature is displayed.

KARL FISCHER AND OTHER POLARIZED ELECTRODE TITRATIONS

1. Connect any one of the two KARL FISCHER output connectors to the BNC input connector with the Jenco Cat. No. 600G, Karl Fischer shorting plug. The 600G is not a standard accessory.
2. Connect a platinum electrode to the second KARL FISCHER output connector.
3. Connect a second platinum electrode to the reference input.
4. Rinse both electrodes with distilled water and immerse into the sample to be measured.
5. Set the MODE switch to mV. The mV indication LED will be on. The instrument is ready for KARL FISCHER and other polarized electrode titrations.
6. The reading measured are relative values. For absolute potential measurement, the two platinum electrodes is to be shorted outside of the sample. The millivolt value indicated by the instrument in this condition is the true zero potential point.

ANALOG OUTPUT

The analog output voltage is measured from the positive, red, terminal to the negative, black, terminal. The analog output for the 671P and 671T is listed below :

MODE	RANGE	Model 671P	Model 671T
pH	0-14 pH	0 to 1400 mV	0 to 140.0 mV
TEMP	0-100℃	0 to 1000 mV	0 to 100.0 mV
mV	±1999 mV	±1999 mV	±199.9 mV
ATC	0-14 pH	0 to 1400 mV	0 to 140.0 mV

The analog voltage output can be used to interface with other instruments such as recorder, printer, 4-20 mA converter, remote indicators, etc.

The following rule musts be observed in order to avoid reading inaccuracies or possible damage to the instrument.

1. If the sample solution is in contact with earth ground, the interface device's circuit common must not be connected to earth ground.
2. The input impedance of the interface device must be greater than 1K Ohm.
3. Make sure that the AC line voltage is never accidentally connected to the analog outputs.

TEMPERATURE COEFFICIENT OF THE pH BUFFERS

	BUFFERS		
℃	10.01	7.00	4.01
0	10.32	7.11	4.00
5	10.25	7.08	4.00
10	10.18	7.06	4.00
15	10.12	7.03	4.00
20	10.06	7.01	4.00
25	10.01	7.00	4.01
30	9.97	6.98	4.02
35	9.93	6.98	4.02
40	9.89	6.97	4.03
45	9.86	6.97	4.04
50	9.83	6.97	4.06
55	9.80	6.97	4.07
60	9.78	6.98	4.10

Table 1

SPECIFICATIONS FOR THE MODELS 671P AND 671T

RANGE	
pH	0 to 14.00
Temp ℃	0 to +100.0
mV	-1999 to +1999
pH ATC	0 to 14.00
RESOLUTION	
pH	0.01
Temp ℃	0.1
mV	1
pH ATC	0.01
ACCURACY	
pH (±1 digit)	±0.1%
Temp ℃ (±1digit)	±0.5
mV (±1 digit)	±0.1%

pH ATC (±1 digit)	±0.1%

TEMPERATURE COMPENSATION	
Auto	0 to +100℃
Manual	0 to +100℃

ANALOG OUTPUT FOR 671P	
pH	0 to 1400 mV
mV	±1999 mV
Temp	0 to 1000 mV
pH ATC	0 to 1400 mV

ANALOG OUTPUT FOR 671T	
pH	0 to 140.0 mV
mV	±199.9 mV
Temp	0 to 100.0 mV
ATC	0 to 140.0 mV

Display for 671P	0.5” high LCD display
Display for 671T	0.56” high LED display

GENERAL	
Input impedance	Greater than 10 to the 12th Ohms
Temperature sensor	Pt-100 (Alpha=0.00385)
Karl fischer output	10 uA
Display	0.5 inch high LCD display
Power source	6 type “AA” batteries or AC line adaptor
Dimensions	28cm×20cm×12cm
Weight	1.45 kgs

ACCESSORIES

Electrodes
Buffer solution，pH 7.00
Buffer solution，pH 4.01
Distilled water
Pt-100 temperature probe
Electrode clamp and stainless steel rod
115 Volt AC line adaptor
230 Volt AC line adaptor
Operating manual (included)

WARRANTY

Jenco Instruments, Ltd. Warrants this product to be free from significant deviations in material and workmanship for a period of 1 year from date of purchase. If repair or adjustment is necessary and has not been the result of abuse or misuse, within the year period, please return-freight-prepaid and the correction of the defect will be made without charge. If you purchased the item from our Jenco distributors and it is under warranty, please contact them to notify us of the situation. Jenco Service Department alone will determine if the product problem is due to deviations or customer misuse.
Out-of –warranty products will be repaired on a charge basis.

RETURN OF ITEMS

Authorization must be obtained from one of our representatives before returning items for any reason. When applying for authorization, please have the model and serial number handy, including data regarding the reason for return. For your protection, items must be carefully packed to prevent damage in shipment and insured against possible damage or loss. Jenco will not be responsible for damage resulting from careless or insufficient packing. A fee will be charged on all unauthorized returns.

NOTE: Jenco Instruments, Inc reserves the right to make improvements in design, construction, and appearance of our products without notice.

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